

74. Structural and mechanical properties of fondan's model systems

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Introduction. According to the results of previous studies [1], emulsifier – citric acid ester - had been chosen to the fondan's recipe. This component improves the structural and mechanical properties, and the results are presented in the paper.

Materials and methods. The objects of research were fondans of wheat flour as the control sample; of rice flour and modified starch PRECISA® Bake GF, which is a texturing system that contain mixture of tapioca, maize and potatoes starches - as experiment sample. The viscosity of fondan's model systems for special purpose has been investigated by means of viscometer Rheotest-2.

Results. The dependence between shear stress and shear rate for experimental prototypes has been fixed. In particular the influence of replacement of wheat flour by rice flour or by modified starch, and the addition of surfactant on the structural and mechanical η properties, Pa·s of model systems have been investigated (Fig.).

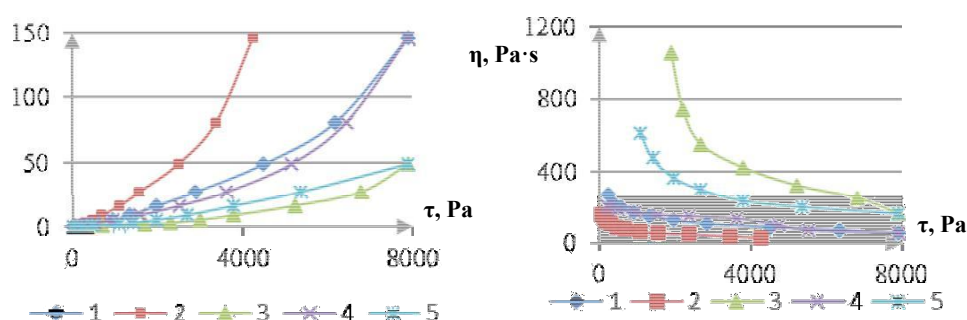


Figure - Rheological flow's curves (a) and rheological viscosity curves (b) of fondan's model systems for special purpose based on: 1 — modified starch with surfactant; 2 — modified starch; 3 — rice flour with surfactant; 4 — rice flour; 5 — wheat flour.

The dependence of viscosity on stress that effects on the samples has been observed. With increasing of stress a viscosity decreases sharply and then decreases slowly and gradually stabilized, approaching a constant value. In these areas the dependence of viscosity on the amount of stress is approaching straight, due to the destruction of the system's structure. During the adding into the recipe prototypes of surfactants, fondan's viscosity is stabilized by reducing the surface tension, improving emulsification of oil with water, changing the aggregation speed of dispersed particles, preventing flocculation.

Conclusion. The improving effect of citric acid ester on structural and mechanical properties of fondan's model systems using innovative recipe's components - rice flour and modified starch has been investigated.

References.

1. Investigation of structural-mechanical properties of the recipe composition for fondans special purpose / O.Dudkina, A. Nemirich, A. Gavrysh and other // Food and Environment Safety. – Suceava: Stefan cel Mare University, 2015. – Vol. XIV, Is. 4. – P. 352-357.

